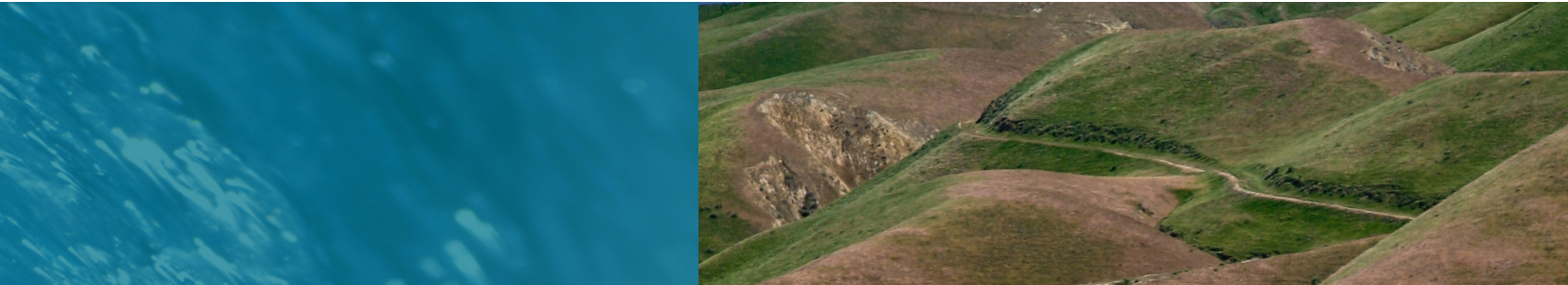


VOLUME 3 - RESOURCE MANAGEMENT STRATEGIES
CHAPTER 8

Water Transfers





California Aqueduct. Voluntary water transfers assist in supplementing water supply portfolios for areas experiencing water scarcity south of the Sacramento-San Joaquin Delta. DWR is one of several public agencies involved in approval and management of proposed water transfers, based on the agency's management of the State Water Project export facilities in the Delta.

Contents

Chapter 8. Water Transfers.....	8-5
Water Transfers in California.....	8-6
Oversight of Water Transfers in California.....	8-8
Potential Benefits	8-9
Potential Costs	8-9
Major Implementation Issues	8-10
Balanced Approach to Regulating Transfers	8-10
Environmental Concerns	8-10
Using Temporary Water Transfers for Long-Term Demands	8-11
Economic Concerns	8-11
Quantifying Uncertainties and Effects on Others	8-12
Need for More Integrated Management of Water Resources	8-12
Infrastructure and Operational Limits	8-12
Climate Change	8-13
Recommendations	8-14
References.....	8-15
References Cited.....	8-15

Chapter 8. Water Transfers

The California Water Code (CWC) defines a water transfer as a temporary or long-term change in the point of diversion, place of use, or purpose of use due to a transfer, sale, lease, or exchange of water or water rights. Temporary water transfers have a duration of one year or less (CWC Section 1725). Long-term water transfers have a duration of more than one year (CWC Section 1728).

Transfers can be between water districts that are neighboring or across the state, provided there is a means to convey or store the water. A water transfer can be a temporary or permanent sale of water or a water right by the water right holder, a lease of the right to use water from the water right holder, or a sale or lease of a contractual right to water supply. Water transfers can also take the form of long-term contracts for the purpose of improving long-term supply reliability. Generally, water is made available for transfer by five major methods:

- Transferring water from reservoir storage that would otherwise have been carried over to the following year. The expectation is that the reservoir will refill during subsequent wet seasons.
- Pumping groundwater (groundwater substitution) instead of using delivered surface water.
- Transferring previously banked groundwater either by directly pumping and transferring the banked groundwater or by pumping the banked groundwater for local use and transferring surface water that would have been used locally. (Groundwater banks consist of water that is “banked” during wet or above-average years. The water to be banked is provided by the entity that will receive the water in times of need. Although transfers or exchanges may be needed to get the water to the bank and from the bank to the water user, groundwater banks are not transfers in the typical sense. The water user stores water for future use; this is not a sale or lease of water rights. It is typical for fees to apply to the use of groundwater banks.)
- Reducing the existing consumptive use of water through crop idling or crop shifting to make water available.
- Reducing seepage to saline sinks by applying water-use efficiency measures. Water that seeps to saline groundwater is irrecoverable. Any deep percolation, whether from canal seepage or from irrigated fields that would otherwise seep to unusable groundwater, can be transferred if the seepage is prevented. Thus, deep seepage conserved from lining a canal or by switching from flood irrigation to drip can be transferred.

Water exchanges are typically water delivered by one water user to another water user, with the receiving water user returning the water at a specified time or when the conditions of the parties’ agreement are met. Water exchanges can be strictly a return of water on a basis agreed upon by the participants or can include payment and the return of water. The water returned may or may not be an “even” exchange. Water can be returned on a one-for-one basis or by another arrangement (e.g., for each acre-foot [af] of water received, 2 af are returned).

Water transfers are sometimes seen as merely moving water from one beneficial use to another. However, in practice many water transfers become a form of flexible system reoperation linked to many other water management strategies, including surface water and groundwater storage, conjunctive management, conveyance efficiency, water use efficiency, water quality improvements, and planned crop shifting or crop idling for the specific purpose of transferring water. These linkages often result in increased beneficial use and reuse of water overall and are

among the most valuable aspects of water transfers. Transfers also provide a flexible approach to distributing available supplies for environmental purposes.

Water Transfers in California

For a historical summary of water transfers in California, see *California Water Plan Update 2005* (California Department of Water Resources 2005).

Each year hundreds of water transfers occur in California. The majority of these transfers are between agricultural water users in the same basin (intra-basin transfers). Intra-basin transfers do not require review by other government agencies because there is no change to the permit provisions for place of use, manner of use, or point of diversion. These transfers are governed by the water rights held by the water district and are a matter of internal allocation adjustments by water district members.

Anecdotal evidence suggests that the percentage of water obtained through water transfers by agricultural buyers is increasing. Throughout the Central Valley, there has been a trend toward higher value crops replacing lower value annual crops. Some of the higher value crops include large acreage increases in permanent crops such as almonds. This trend has also occurred in the project service area of the West San Joaquin Division (westside) of the Central Valley Project (CVP). Water districts in the westside often participate in water markets to purchase supplemental water to meet water requirements of the permanent crops and account for much of the intra-basin agricultural water transfers. The westside is particularly susceptible to water shortages because many westside CVP contracts have a lower priority than other CVP contracts. Having lower priority for contract water means this region is typically the first and most severely affected by water shortages.

During 2005 and 2006, California experienced a relatively wet period, and water users had the opportunity to store some excess water in groundwater banks for future withdrawal. Many of these reserves were tapped in 2007 because of dry hydrology. In 2008, continuing dry conditions prompted the purchase of approximately 230,000 af of water from Northern California agriculture, specifically by various buyers south of the Sacramento-San Joaquin Delta (Delta).

In 2009, Governor Arnold Schwarzenegger declared drought and tasked the California Department of Water Resources (DWR) with establishing the 2009 Drought Water Bank (Water Bank) to purchase water from willing sellers, which would be sold at cost to willing buyers. The amount of water requested for purchase from the Water Bank exceeded the approximately 80,000 af purchased for the buyers of the Water Bank. Several factors came to play in 2009 that limited the availability of Water Bank supplies. One significant factor was that high rice prices meant that rice growers were not willing to sell water at the price offered by the Water Bank.

In addition, as a result of operational constraints placed by the 2008 U.S. Fish and Wildlife Service and the 2009 National Marine Fisheries Service biological opinions for the coordinated operational criteria and plan (OCAP) of the CVP and the State Water Project (SWP), about half of the water made available by the idling of rice land could not be delivered to buyers in 2009, thus increasing the cost of transfer water to buyers beyond what they could pay or were willing to pay. In addition to the water transferred through the Water Bank, about 177,000 af were purchased by DWR from long-term water transfer programs already in place before the Water Bank, including the Lower Yuba River Accord (Yuba Accord).

An additional 23,100 af of water were transferred in 2009 south of the Delta, using only SWP conveyance facilities. Another nearly 400,000 af were reallocated among the CVP users but was not transferred across the Delta.

Operations restrictions, resulting from the biological opinions, affected the Water Bank's ability to purchase water (National Marine Fisheries Service, Southwest Regional Office, 2009; U.S. Fish and Wildlife Service 2008, 2009a, 2009b) originating from certain transfer proposals due to timing constraints in the movement of transfer water through the Delta. The biological opinions have resulted in restrictions on the export of combined CVP and SWP (Project) water at certain times of the year. Pumping restrictions have essentially limited pumping transfer water from the Delta to July through September. The result is that an increased export of Project supply has been shifted to the summer months, with the consequence that in years when SWP allocations are high (greater than 60 percent of the Table A supplies [see Glossary]), there is very limited to no capacity to convey water made available for transfer from upstream of the Delta to downstream. The net result of the biological opinions is to add additional uncertainty to water transfer transactions. As such, there is no guarantee that properly developed water transfer agreements can be executed and the transfers completed.

The pumping restrictions resulting from biological opinions have significantly affected the opportunities for cropland idling and cropland shifting water transfers. Transfer water from crop idling and crop shifting becomes available beginning in May. In some situations, particularly for Sacramento River diverters, required environmental releases make it impossible to hold transfer water in the Shasta Dam's reservoir for future delivery. This causes about 40 percent of the water made available for transfer to be undeliverable to the buyer in any given year. This circumstance causes the price of the transfer water from cropland idling and shifting to nearly double from the Sacramento River diverters. The water becomes so expensive, and so much cannot be transferred due to the operational constraints, that buyers are not willing to purchase the transfer water from crop idling or shifting from those diverters. Certain Feather River diverters, however, are able to store water from rice idling made available in May and June in Oroville Reservoir, or in the associated Thermalito complex, which can then be transferred during the July-September transfer period. The net result of the impact of the biological opinions on rice land idling for water transfers is that only about 25 percent of the potential rice acreage is able to participate in water transfers, as compared with the participating rice acreage before the biological opinions.

The Environmental Water Account (EWA) was established by the CALFED record of decision signed in August 2000 (CALFED Bay-Delta Program 2000). The EWA provided for enhancing environmental conditions for at-risk fish species, above and beyond regulatory requirements, through curtailment of pumping or reservoir releases (re-operations) at CVP and SWP facilities, with no net water cost to water users downstream of the Delta. The CVP and SWP water supplies forgone as a result of the re-operations were made up from EWA assets. From 2001 to 2006, EWA operational assets averaged 82,000 af, with a range of 0 to 150,000 af in a given year. The EWA negotiated an average of 60,000 af per year — termed as Component 1 water and typically stored in New Bullards Bar Reservoir — in the Yuba Accord (Yuba County Water Agency 2009). The Yuba Accord agreement runs to 2015, with a possible extension to 2025. According to provisions of the accord, the EWA's Yuba River water (Component 1 water) is only provided when the Delta is in balanced conditions. In rare instances, which occurred in 2006 and again in 2011, the Delta was in excess conditions throughout the summer period and into the fall, and the EWA's Yuba River water was carried over to a subsequent year when it could be made available and delivered to end users. In the foreseeable future, available Yuba River water will be used to offset SWP water lost from the recent Delta biological opinions.

Oversight of Water Transfers in California

Water transfers that involve changes in point of diversion, place of use, or purpose of use to a water right most often require the approval of the State Water Resources Control Board (SWRCB). Transfers that require the use of State, regional, or a local public agency's conveyance facilities require the owner thereof to determine that the transfers will not harm any other legal user of water, will not unreasonably affect fish and wildlife, and will not unreasonably affect the overall economy of the county from which the water is transferred (CWC Section 1810[d]). Strictly speaking, economic issues are typically only required to be evaluated in water transfers that seek to use DWR's water conveyance facilities or those of other State or local agencies. However, economic impacts associated with physical changes to the environment may require analysis under the California Environmental Quality Act (CEQA).

In addition, the California Water Code (CWC) specifies the requirements for changes in water right permits subject to the oversight of the SWRCB (post-1914 appropriated water; CWC Sections 1702, 1727, and 1736) and for water rights not subject to the SWRCB (pre-1914; CWC Section 1706). The CWC also specifies that DWR and other regional and local agencies must allow use of any unused conveyance capacity to a bona fide transferor of water (CWC Section 1810 et seq.).

To assist water projects that may require the use of Project facilities to complete a transfer, DWR and the U.S. Bureau of Reclamation (Project Agencies) have developed a draft technical information document. This document provides details that will assist transferors in developing the technical information that the two agencies will need to make their determinations under the CWC. This document is revised as needed and posted on DWR's website (California Department of Water Resources and U.S. Bureau of Reclamation, Mid-Pacific Region 2012).

Additionally, as of the preparation of *California Water Plan Update 2013*, the Delta Plan was prepared by the Delta Stewardship Council, pursuant to the Delta Reform Act. As drafted, the Delta Plan would contain enforceable regulatory policies that would apply to certain proposed plans, programs, and projects of public agencies that have been classified as "covered actions," in addition to a multiplicity of non-regulatory "recommendations." Public agencies that propose to undertake covered actions would be required to certify before the Delta Stewardship Council that the action is consistent with the Delta Plan. In 2016, temporary through-Delta water transfers may require a consistency determination with the Delta Plan. This would add another level of oversight for water transfers.

As the water transfer market has matured, the buyers and Northern California sellers have begun to develop mechanisms to better respond to concerns over potential transfer effects on local water users and the environment. Water transfer proposals are generally designed to avoid injuring any legal user of water; avoid unreasonably affecting fish, wildlife, or other instream beneficial uses; and avoid unreasonably affecting the overall economy or the environment of the county from which the water is being transferred. To further ensure that sustainable transfers are being developed, continued research and study of Northern California aquifers is necessary to better understand how those aquifers can safely supply water during times of drought. The studies must be a joint effort of State, federal, and local government, as well as involve other interested parties.

Local leadership and initiative are also needed to implement water transfers. Water transfers are typically proposed by local water agencies and can benefit from local community involvement

in the development of these proposals. Some counties have passed local ordinances to regulate groundwater extraction for water transfer purposes. With adequate public notice, timely disclosure of proposals, and meaningful public participation, local communities can best assess their area's water demands and supplies and determine whether there is potential for transferring water outside the local region.

Potential Benefits

For receiving areas, water transfers have the potential to improve economic stability and environmental conditions that would otherwise deteriorate with water scarcity. Sellers can use the compensation from transfers to fund beneficial activities, though there is no guarantee that benefits to the seller will benefit the source area as a whole. Compensation from most transfers involving agricultural water goes directly to the participating landowner, who may choose to reinvest in the farming business. In some cases, compensation goes to water districts, which can use the income to reduce water rates, improve facilities, or improve environmental conditions. For example, Western Canal Water District, in the northern Sacramento Valley, used proceeds from Water Bank sales to remove diversion dams and reconfigure its canals to reduce impacts on threatened spring-run salmon. Transfers by regional water agencies can provide additional resources to benefit the entire community. For example, the Yuba County Water Agency has used more than \$10 million from the proceeds of water transfers over the past several years to fund needed flood control projects.

Potential Costs

The direct costs of completing a water transfer include more than just the price of water to the seller. Additional direct costs to the buyer include conveyance, storage, and treatment costs. Sale prices reflect the cost to make the water physically available for transfer and, in some cases, added monitoring or mitigation needed to protect the environment or other legal water users. The buyer typically arranges for transferred water to be conveyed to the area of use. Conveyance costs can be significant, and conveyance losses can lessen the amount of water actually delivered to the receiving area. In addition, there are also administrative costs of the conveyance agency in developing conveyance contracts, including staff time for ensuring compliance with statutory provisions regarding third-party impacts and the development of associated environmental review documents by the transfer proponents.

Another cost related to transferring water is carriage water. Carriage water is the extra water needed to carry a unit of water across the Delta to the pumping plants, while maintaining a constant salinity. For the Sacramento River, this has generally been about 20 percent of the transfer water and for the San Joaquin River, it is about 10 percent. It is worth noting, however, that in 2012 and 2013 carriage water losses for the Sacramento River were as high as 30 percent of the transfer water. Carriage water losses are usually viewed as part of the overall transaction cost associated with making a water transfer. Costs associated with carriage water losses, along with other transaction costs, are typically negotiated between buyers and sellers for a water transfer and may be reflected in the overall pricing.

Major Implementation Issues

Balanced Approach to Regulating Transfers

Some stakeholders assert that State laws and oversight of water transfers are not adequate to protect the environment, third parties, public trust resources, and broader social interests that may be affected by water transfers. This is particularly a concern for water transfers involving pre-1914 water rights, which are not subject to regulation by the SWRCB. Conversely, there is also concern that efforts to regulate water transfers more heavily may unnecessarily restrict many short-term, intraregional transfers that have multiple benefits during temporary supply shortages and that have little likelihood of direct or indirect impacts. The key issue is how to balance these concerns to allow water transfers to continue as a viable water management strategy while having mechanisms in place to minimize effects on others.

Stakeholders also have asserted that the regulatory requirements for completing water transfer agreements are burdensome. Much of the information requested by DWR and the U.S. Bureau of Reclamation from water transfer proponents is aimed at ensuring that the water being transferred is “a real water supply” (i.e., additional water made available to the hydrologic system for transfer by the supplier) and not someone else’s water. Some would contend that the present system is warranted and presents an adequate level of protection. For example, a water transfer involving pre-1914 water rights, while not subject to the review of the SWRCB, would require CEQA compliance if one of the parties were a public agency or would require the conveyance of a public agency to complete the transfer. Additionally, any project that would require the use of a public agency’s conveyance would require the agency that owns the conveyance to make certain determinations pursuant to CWC Section 1810(d) (no injury to other water users and no unreasonable impact on wildlife and the economy of the county from which the transfer originated).

In relation to these impacts, it should be noted that water is a resource fundamental to the physical and economic well-being of the local communities and areas in which it originates and is used. Although not readily apparent, far more water is appropriated in water rights permits for a given system than originally flows in the source system. This discrepancy in overappropriation of water rights can be explained by recognizing that water can be used and reused many times over. Impacts that may occur from various water management strategies are frequently hard to assess, in that most water systems are physically complex and uncertain and the uses in them are highly interdependent. For example, groundwater extraction, including that water used for water transfers involving groundwater substitution, may connect with and affect surface water flow. The extent of that impact would depend on when the extraction occurred and the magnitude of groundwater recharge by surface water replenishment. This could potentially affect water right holders with access to those surface waters. At this time, the analyses of these types of impacts are complex and replete with uncertainties. Future analytical tools may help to explain these complexities and reduce system uncertainties.

Environmental Concerns

Environmental consequences of transfers could occur in three places: the area from which water is transferred, the area through which water is conveyed, and the area to which water is transferred. Cumulative effects of short- and long-term transfers could have impacts on habitat,

water quality, and wildlife caused by substituting groundwater for surface water; changing the location, timing, and quantity of surface diversions; reducing agricultural return flows to wildlife areas; or changing crop patterns through crop shifting or idling. For example, rice growing areas could have significant secondary benefits as wildlife habitat. Transfers that involve crop idling in these areas could either harm or benefit wildlife, depending on implementation. Transfers that involve increased groundwater pumping also raise concerns over groundwater overdraft and the long-term sustainability of groundwater resources. In addition, long-term water transfers that induce new urban development in the receiving area may have environmental impacts.

Using Temporary Water Transfers for Long-Term Demands

The potential for temporary water transfers to be used for long-term demands raises a couple concerns. One is that urban areas may use limited-duration transfers to accommodate additional development with water supplies that are not sustainable. Another is that agricultural users may rely on limited-duration transfers to supply permanent crops, such as orchards, that cannot be easily scaled back during droughts. Temporary water transfers are also used to supply the environment, such as refuge water, but these do not provide long-term supplies for this environmental use.

Economic Concerns

Short-term, out-of-county transfers created through extensive crop idling can reduce production and employment of both on-farm and secondary economic sectors, resulting in reduced tax revenues and increased costs for farmers who are not participating in the transfer. Extensive idling of crops that results in unemployment of low-wage laborers could be considered unfair treatment under the State's environmental justice policies (California Government Code Section 65040.12). In addition, reduced revenues could affect local governments disproportionately, with potential impacts on spending for a wide range of services provided by local government. Long-term transfers could result in similar impacts, even though the amount of fallowed land may be less. For long-term transfers, impacts on other elements of the local community (e.g., schools, businesses) may be more widespread and severe. Transfers of surface water that are replaced by increasing groundwater pumping may reduce groundwater levels and increase the pumping costs to other groundwater users, and may also contribute to groundwater overdraft.

State law generally requires that water transfers not unreasonably affect the overall economy of the county from which the water is transferred (referred to as the source area). However, there is potential for some economic disruption to source areas, depending on the source of transferred water, the amount of water transferred, and the duration of the transfer. The CWC provides for limiting the economic impacts on local communities by limiting the amount of water that can be provided by cropland idling by a water supplier to 20 percent of the water that would have been applied or stored (CWC Section 1745.05[b]), unless a hearing is conducted. While groundwater substitution still allows for a crop to be produced, cropland idling does not produce a crop, which may cause economic impacts on third parties. Although there is no evidence that recent water transfers have had long-term negative economic impacts on source areas, there is a concern that source areas could experience long-term economic impacts if transfers were to become more widespread. Water scarcity can also cause economic impacts, both where the shortage occurs and far beyond. Water transfers can help reduce water scarcity in areas receiving transfers, thereby helping to avoid job losses and secondary economic impacts in these areas.

Quantifying Uncertainties and Effects on Others

Transfers, especially those where water is moved long distances, are limited by several factors, including access to and physical capacity of conveyance systems; environmental and water quality regulations; evaporation, evapotranspiration, and seepage along the flow path; linkages between surface water and groundwater movement and use; and other factors difficult to quantify or anticipate. For example, those water users who traditionally have relied on return flows from upstream diversions as a source of supply are concerned about being affected by changes in the timing and quantity of flows resulting from water transfers or water conservation measures. Quantifying the actual water savings from crop shifting and crop idling is particularly difficult because only the consumptive use by the crop is transferable in most cases. There is a risk that estimates of the water supply benefits from the transfer to the water system (estimates of “real water”) will be inaccurate and that the transfers have unintended consequences to other water users, local economies, or the environment. A key challenge is to improve methods for quantifying these uncertainties and to include adequate monitoring and assurances when implementing water transfers. Monitoring is particularly critical for transfers that obtain water from crop idling, from crop shifting, from water use efficiency measures, or by increasing groundwater use. Information may be needed on historical and current land use and water use, groundwater levels, land subsidence, water quality, environmental conditions, and surface water flows.

Need for More Integrated Management of Water Resources

In California, authority is often divided among local, State, and federal agencies for managing different aspects of groundwater and surface water resources. Several examples are listed below.

- The SWRCB has jurisdiction for appropriative water rights dating from 1914, but disputes over appropriative water rights dating before 1914 are settled by the court system.
- The SWRCB has jurisdiction over groundwater quality, but disputes over groundwater use are settled by the court system.
- County groundwater ordinances and local agency groundwater management plans often only apply to a portion of the groundwater basin, and those with overlapping boundaries of responsibility do not necessarily have consistent management objectives.

Failure to integrate water management across jurisdictions makes it problematic to develop transfers with multiple benefits; provide for sustainable use of resources; identify and protect or mitigate potential impacts on third parties; and ensure protection of the legal rights of water users, the environment, and public trust resources.

Infrastructure and Operational Limits

The ability to optimize the benefits of water transfers depends on access to and the physical capacity of existing conveyance and storage facilities. For example, when export facilities in the Delta are already pumping at full capacity, transferable water cannot be moved. This occurred in 2003, when the Metropolitan Water District of Southern California (MWD) negotiated water transfers with growers in the Sacramento Valley but was unable to move water through the Delta, where the conveyance system was flowing full, or to store the water in Lake Oroville, which filled with late spring rain. As noted previously, the implementation of the biological opinions for

the OCAP has also limited the period when water can be transferred across the Delta. This has affected Project water operations such that the exporting of Project water has now shifted to the water transfer period, which reduces available capacity for transfers.

The ability to convey water is also an important aspect of water transfers between the Imperial Irrigation District and the San Diego County Water Authority, which requires access to the Colorado River Aqueduct owned and operated by the MWD.

Climate Change

Water supply reliability faces increasing challenges, including impacts caused by changing climate. Increasing air temperatures will result in more precipitation falling as rain rather than as snow. This will shift the runoff timing, with higher runoff occurring in the winter and early spring and lower runoff in the summer and fall (California Natural Resources Agency 2009). The ability to capture this water for supply will be constrained in some cases by the need for flood protection. Warmer air temperatures will also increase the demands for both urban and agricultural users. Anticipated impacts from climate change also include more intense wet and dry periods (California Natural Resources Agency 2009). Longer, more frequent droughts will put additional demands on water supplies, and larger storm events could damage conveyance infrastructure. Water transfers can provide benefits in adapting to these expected changes in climate (preparing for unavoidable changes).

Adaptation

Water transfers can help improve regional resiliency to future climate changes by providing more operational flexibility and greater water supply reliability. However, the ability to transfer water may also be affected by these changes. Rising sea levels and reduced runoff in the summer and fall will contribute to greater salinity intrusion into the Delta, further limiting the ability to transfer water south of the Delta during the period when transfers can occur. While water transfers from north to south will potentially be limited, transfers between water users within a region could be an effective strategy for meeting local demands or responding to shortages associated with longer droughts or disruptions in deliveries.

Mitigation

Mitigation is accomplished by reducing or offsetting greenhouse gas emissions in an effort to lessen contributions to climate change. Within the SWP, water transfers are not typically a mitigation strategy. Water transferred from north to south via pumps is energy intensive. Transferred water replaced by groundwater pumping is another source of greenhouse gas emissions. If the transferred water is not replaced, then the land dries out and is left idle, releasing any sequestered carbon in the process. Water transfers could be considered a mitigation strategy only if the transfer eliminated the need to use a more energy-intensive source of water.

Recommendations

1. Because local government and water agencies have the lead role in developing and implementing water transfers, they should:
 - A. Implement monitoring programs that evaluate potential specific and cumulative impacts from transfers, provide assurances that unavoidable impacts are mitigated reasonably, and demonstrate that transfers comply with existing law.
 - B. Develop groundwater management plans to guide the implementation of water transfers that increase groundwater use or that could affect groundwater quality.
 - C. Evaluate and implement regional water management strategies to improve regional water supplies to meet municipal, agricultural, and environmental water demands and minimize the need to import water from other hydrologic regions.
 - D. Provide for community participation when identifying and responding to conflicts caused by transfers to which they are a party.
2. State and federal agencies, in addition to implementing State and federal law, should assist with resolving potential conflicts over water transfers when local government and water agencies are unable to do so and when there are overriding State or federal concerns.
3. State and federal agencies continue to gain consensus on how best to implement water transfers. The following actions are ongoing and should be continued and improved:
 - A. Preparing programmatic and site-specific CEQA and National Environmental Policy Act (NEPA) documents and other technical assistance for interregional transfers.
 - B. Developing and improving current computer modeling tools with the capacity to assess impacts of groundwater substitution transfers, including the effects on groundwater basins, surface water depletion, water quality, and subsidence.
 - C. Conserving, protecting, and managing fish, wildlife, native plants, and habitats necessary for ensuring biologically sustainable populations of those species, in particular by the California Department of Fish and Wildlife (formerly known as the California Department of Fish and Game) as the trustee agency responsible for, and with jurisdiction over, those resources of the State (California Fish and Game Code Section 1802).
 - D. Streamlining the approval process of State and federal agencies for water transfers where approvals are required, while protecting water rights, the environment, and local economic interests.
 - E. Refining current methods to identify and quantify water savings for transfers using crop idling, crop shifting, and water use efficiency measures; and assessing the impacts of riceland idling on environmental resources, while using a collaborative process to evaluate a wide range of methods.
 - F. Developing, with interested parties, acceptable ways to identify, lessen, and distribute economic impacts from transfers that use crop idling and crop shifting.
 - G. Providing financial assistance for local and regional groundwater management activities that promote sustainable and coordinated use of surface water and groundwater. Seeking consensus among interested parties about the role of water transfers as a water management strategy while identifying and preventing or mitigating potential impacts on other water users, third parties, the environment, and public trust resources.

- H. Improving coordination and cooperation among local, State, and federal agencies with different responsibilities for surface water and groundwater management to facilitate sustainable transfers with multiple benefits, allow efficient use of agency resources, and promote easy access to information by the public.
- I. Developing water transfer policies that balance the ability of agriculture to provide water for transfers on a limited periodic basis to help with temporary water scarcity so that transfers do not destabilize agricultural productivity and economic benefits.

References

References Cited

- CALFED Bay-Delta Program. 2000. *Programmatic Record of Decision*. Sacramento (CA): CALFED Bay-Delta Program. (3 vol.). 82 pp. Conveyance Program. Viewed online at: <http://bibpurl.oclc.org/web/752>. Accessed: January 22, 2013.
- California Department of Water Resources. 2005. *California Water Plan Update 2005*. Volume 2, “Resource Management Strategies”; Chapter 23, “Water Transfers.” Sacramento (CA): California Department of Water Resources. Viewed online at: <http://www.waterplan.water.ca.gov/previous/cwpu2005/index.cfm#vol2>.
- California Department of Water Resources and U.S. Bureau of Reclamation, Mid-Pacific Region. 2012. *Draft Technical Information for Water Transfers in 2012: Information to Parties Interested in Making Water Available for 2012 Water Transfers*. Sacramento (CA): California Department of Water Resources. Viewed online at: <http://www.water.ca.gov/watertransfers/docs/TechInfoDoc-WaterTransfers-2012.pdf>. Accessed: Jan. 22, 2013.
- California Natural Resources Agency. 2009. 2009 *California Climate Adaptation Strategy*. Viewed online at: <http://www.energy.ca.gov/2009publications/CNRA-1000-2009-027/CNRA-1000-2009-027-F.PDF>. Accessed: Jan. 22, 2013
- National Marine Fisheries Service, Southwest Regional Office. 2009. “Operations, Criteria and Plan.” Long Beach (CA): National Oceanographic and Atmospheric Administration’s National Marine Fisheries Service, Southwest Regional Office. [Web page.] Viewed online at: <http://swr.nmfs.noaa.gov/ocap.htm>. Accessed: December 2009.
- U.S. Fish and Wildlife Service. 2008. *Formal Endangered Species Act Consultation on the Proposed Coordinated Operations of the Central Valley Project (CVP) and State Water Project (SWP)*. Sacramento (CA): U.S. Department of the Interior, Fish and Wildlife Service. [Memorandum 81420-2008-F-1481-5.] Viewed online at: http://www.fws.gov/sfbaydelta/documents/SWP-CVP_OPs_BO_12-15_final_OCR.pdf.
- . 2009a. *Endangered Species Consultation on the Proposed 2009 Drought Water Bank for the State of California*. Sacramento (CA): U.S. Department of the Interior, Fish and Wildlife Service. 91420-2008-F-1596-1. 49 pp.
- . 2009b. “Delta Update.” Sacramento (CA): U.S. Fish and Wildlife Service, Sacramento Fish & Wildlife Office. [Web page.] Viewed online at: http://www.fws.gov/sacramento/delta_update.htm. Accessed: December 2009.
- Yuba County Water Agency. 2009. “Lower Yuba River Accord.” Marysville (CA): Yuba County Water Agency. [Web page.] Viewed online at: <http://www.ycwa.com/projects/detail/8>. Accessed: December 2009.